

<b>Notice of Allowability</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/583,420	GOTO, YOSHIHIRO	
	<b>Examiner</b>	<b>Art Unit</b>	
	Jason Heidemann	2624	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 12/10/2010.
2. ☒ The allowed claim(s) is/are 1-9, 12-14 and 16-19.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☒ All    b) ☐ Some\*    c) ☐ None    of the:
  1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
  5. ☐ CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.
    - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review ( PTO-948) attached
      - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
    - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).**
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

- |  |  |
|--|--|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892)   | 5. <input type="checkbox"/> Notice of Informal Patent Application  |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 6. <input checked="" type="checkbox"/> Interview Summary (PTO-413),<br>Paper No./Mail Date <u>20110315</u> . |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO/SB/08),<br>Paper No./Mail Date _____    | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment  |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit<br>of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance                         |
|  | 9. <input type="checkbox"/> Other _____.   |

/SATH V. PERUNGA VOOR/  
Primary Examiner, Art Unit 2624

/Jason Heidemann/  
Examiner, Art Unit 2624

## **DETAILED ACTION**

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### **General Information Matter**

1. Applicant filed Amendment on 12/10/2011 for application 10/583420 amending claims 1, 14, and 19. Currently, Claims 1- 9, 12-14, 16-19 are pending.

### **Response to Amendment**

The amendment received 12/10/2011 has been entered and considered in full.

***Response to Arguments***

***Request for Information - 37 CFR 1.105***

Examiner requested information under rule 37 CFR 1.105 for information regarding any prior art teachings of approximating a contour using overlapping element graphics. Applicants and the assignees have submitted, see page 14, "Applicant does not have any prior art (other than the information submitted with the Information Disclosure Statements filed on June 14, 2006, June 24, 2008, October 7, 2009 and July 16, 2010)." Examiner accepts this as a complete reply.

***35 USC § 103***

- Claims 1-9, 12-14, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thomas in view of Staib
- Claims 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Thomas and Staib as applied to claim 1 above, and in further view of Barequet

Applicant's arguments, see pages 9-14, filed 12/10/2011, with respect to the claims have been fully considered and are persuasive. The rejection of all pending claims has been withdrawn.

The Examiner believes that all the arguments of the Applicant(s) have been properly addressed and explained.

### ***Priority***

This application claims benefit of a National Stage Application No. PCT/JP04/18796, filed 12/16/2004.

This application claims benefit of foreign priority under 35 U.S.C. 119(a-d) of a Japanese patent application, JP 2003-417842, filed 12/16/2003.

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### ***Examiner's Note***

#### ***1. Claim interpretation***

Examiner notes "rectifiable" were never recited explicitly in the specification. Applicant has submitted evidence for support of the term, in Fig. 3, along with paragraph [0068]. Examiner has assigned the meaning to "rectifiable" to relate to bounded (finite length) contours as found in the specification, [0068].

### **EXAMINER'S AMENDMENT**

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee. Authorization for this examiner's amendment was given by Paul Teng from an examiner's initiated telephone interview with Paul Teng that occurred on March 11<sup>st</sup>, 2011.

The application has been amended as follows:

14. (currently amended) A region extraction method, by an image processing apparatus, for extracting a specified region in an image, the method including the steps of:

(l) displaying the image;

(m) selecting a desired region in the image;

(n) extracting, by the image processing apparatus, a plurality of partial regions from the desired region;

(o) combining the plural partial regions and synthesizing at least parts of the desired region; and

(p) making at least a rectifiable partial contour of the synthesized region as a first closed contour;

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- (q) enlarging or reducing one or more partial regions with a predetermined magnification;
- (r) combining the one or more enlarged or reduced partial regions, and synthesizing at least a part of a desired region being enlarged or reduced;
- (s) making at least, a partial contour of at least a part of the enlarged or reduced desired region similar to the first closed contour as a second closed contour;
- (t) extracting, by the image processing apparatus, a region including at least a stratified region held between the first closed contour and the second closed contour.

#### **Allowable Subject Matter**

1. Claims 1- 9, 12-14, and 16-19 are allowed.
2. The following is an examiner's statement of reasons for allowance: the reasons for allowance are apparent based on the Applicant's persuasive arguments on see pages 9-14, filed 12/10/2011.

The closest following prior arts were found:

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- Thomas et al. ("Effect of Black Blood MR Image Quality on Vessel Wall Segmentation", Magnetic Resonance in Medicine 46, pages 299–304 (2001), hereinafter Thomas)
- Staib et al. (Parametrically Deformable Contour Models, IEEE Computer Society Conference on Computer Vision and Pattern Recognition. San Diego, 1989, pp. 427–430 hereinafter Staib)
- Barequet et. al (Piecewise-Linear Interpolation between Polygonal Slices, Proceedings of the tenth annual symposium on Computational geometry, Stony Brook, New York, 1994, pages 93 – 102. herein after Barequet).
- Jacob et al., US 2004/0125997 A1, Method for processing an image sequence of a distortable 3-d object to yield indications of the object wall deformations in time.
- Gerard al., US 20030006984 A1, Image processing method for displaying an image sequence of a deformable 3-D object with indications of the object wall motion.
- Pathak et al US 5795296 A Pipeline process for automatically measuring object boundary from ultrasound image samples..

With respect Claim 1, applicant claims:

A region extraction method, by an image processing apparatus, for extracting a specified region in an image, the method including the steps of:

(a) displaying the image;

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- (b) selecting a desired region in the image;
- (c) selecting an element graphic corresponding to at least a partial contour of a partial region in the desired region;
- (d) approximating at least a rectifiable partial contour of the selected element graphic to at least said partial contour of the partial region;
- (e) repeating the steps (c) to (d) at least twice, so that at least two selected element graphics overlap with each other; and
- (f) making a first closed contour by combining at least said rectifiable partial contour of the respective element graphics after the approximation;
- (j) obtaining, by the image processing apparatus, a second closed contour similar to the first closed contour by enlarging or reducing the first closed contour; and
- (k) extracting, by the image processing apparatus, a region including a stratified region held between the first closed contour and the second closed contour.

Applicant uniquely claimed a distinct feature in the instant invention, which are not found in the prior art, either singularly or in combination. The feature “approximating at least a rectifiable partial contour of the selected element graphic to at least said partial contour of the partial region.” See applicant's persuasive arguments on see pages 9-14, filed 12/10/2011



With respect Claim 14, applicant claims:

A region extraction method, by an image processing apparatus, for extracting a specified region in an image, the method including the steps of:

- (l) displaying the image;
- (m) selecting a desired region in the image;
- (n) extracting, by the image processing apparatus, a plurality of partial regions from the desired region;
- (o) combining the plural partial regions and synthesizing at least parts of the desired region; and
- (p) making at least a rectifiable partial contour of the synthesized region as a first closed contour;
- (q) enlarging or reducing one or more partial regions with a predetermined magnification;
- (r) combining the one or more enlarged or reduced partial regions, and synthesizing at least a part of a desired region being enlarged or reduced;
- (s) making at least, a partial contour of at least a part of the enlarged or reduced desired region similar to the first closed contour as a second closed contour;

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(t) extracting, by the image processing apparatus, a region including at least a stratified region held between the first closed contour and the second closed contour.

Applicant uniquely claimed a distinct feature in the instant invention, which are not found in the prior art, either singularly or in combination. The feature “making at least a rectifiable partial contour of the synthesized region as a first closed contour.” See applicant's persuasive arguments on see pages 9-14, filed 12/10/2011

With respect Claim 19, applicant claims:

A region extraction device comprising:

a display means for displaying an image, and displaying a plurality of element graphics along with the image;

an input means for receiving a selection of a desired region in the image and a selection of an element graphic corresponding to at least a partial contour of a partial region in the desired region, the input means receiving at least two selections of element graphics;

a calculating means for executing a desired image processing relating to the image, wherein:

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the calculating means, for each of the at least two selected element graphics, approximates at least a rectifiable partial contour of the selected element graphics to at least a partial contour of the desired region, so that at least two selected element graphics overlap with each other, the calculation means makes a first closed contour by combining at least said rectifiable partial contour of the respective element graphics after the approximation, obtains a second closed contour similar to the first closed contour by enlarging or reducing the first closed contour, and extracts a region including at least a stratified region held between the first closed contour and the second closed contour.

Applicant uniquely claimed a distinct feature in the instant invention, which are not found in the prior art, either singularly or in combination. The feature “the calculation means makes a first closed contour by combining at least said rectifiable partial contour of the respective element graphics after the approximation.” See applicant's persuasive arguments on see pages 9-14, filed 12/10/2011

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled “Comments on Statement of Reasons for Allowance.”

***Comment on 35 USC § 101***

Regarding Claim 19, the claim is in a system claim, and is statutory since it recites means plus language. Given the broadest reasonable interpretation of claim 19 in light of the specification and consistent with a conclusion reached by one of ordinary skill in the art, the claimed apparatus is construed by the examiner as software (or computer program) residing and running on one or more hardware based devices, such as a computer or one or more computer components. Claim 19 is therefore drawn to a statutory machine.

Regarding Claim 1 is drawn to a process/method of region extraction method for extracting a specified region in an image by us of an image processing apparatus, the various steps of claim 1, all of which are central to the purposes of the invention, could not be reasonably performed without the use of a cooperating programmed computer/processor. Claim 1 and its dependents pass the machine-or-transformation test (*In re Bilski*) and region extraction is not an abstract idea, therefore Claim 1 and its dependents are statutory.

Regarding Claim 14 is drawn to a process/method of region extraction method for extracting a specified region in an image by us of an image processing apparatus, the various steps of claim 14, all of which are central to

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the purposes of the invention, could not be reasonably performed without the use of a cooperating programmed computer/processor. Claim 14 passes the machine-or-transformation test (*In re Bilski*) and region extraction is not an abstract idea, therefore Claim 14 is statutory.

### Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason Heidemann:

- phone (571) 270-5173,
- fax (571) 270-6173, or
- e-mail [jason.heidemann@uspto.gov](mailto:jason.heidemann@uspto.gov).

The examiner can normally be reached on Monday - Thursday/7:30 A.M. to 5:00 P.M.. For e-mail communications, please note MPEP 502.03, which states, in relevant part, "[w]ithout a written authorization by applicant in place, the USPTO will not respond via Internet e-mail to any Internet correspondence which contains information subject to the confidentiality requirement as set forth in 35 U.S.C. § 122." A sample authorization form which may be used by applicant can be found in MPEP 502.03 section II.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Bella can be reached on 571-272-7778. The fax phone numbers for the organization where this application or proceeding is assigned are 571-273-8300 for regular communications and 571-273-8300 for

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After Final communications. TC 2600's customer service number is 571-272-2600.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jason Heidemann/  
Examiner, Art Unit 2624

03/15/2011

/Sath V. Perungavoor/

Sath V. Perungavoor  
Primary Examiner, Art Unit 2624  
Dated: March 22, 2011